

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

Claim 1. (Currently amended) A high speed direct mold clamping apparatus of an injection molding machine comprising:

a clamping cylinder of a uniform inside diameter, the clamping cylinder including an oil channel portion having ~~at least one~~ a plurality of grooved oil ~~channel~~channels formed therein and a close contact portion formed of a curved surface leaded to the oil channel portion;

a clamping ram slidably coupled with the clamping cylinder, and having a first channel for allowing for the flow of oil and a booster cylinder connected to the first channel;

a booster ram slidably coupled with the booster cylinder of the clamping ram and having a second channel leaded to the booster cylinder;

a moving platen coupled with one end of the clamping ram;

a fastening element for coupling the one end of the clamping ram with the moving platen by adjusting the length therebetween;

a stationary platen installed to be opposed to the moving platen;

a first port formed in the oil channel portion for the selective flow of oil;

a second port formed in the close contact portion for the selective flow of oil; and means for controlling the flow of oil through the first and the second channels and the first and the second ports;

wherein the plurality of grooved oil channels are arranged radially in the oil channel portion, wherein the clamping ram has a plurality of coupling projections at one end, and wherein the fastening element includes a pair of half nuts arranged in the moving platen, capable of coupling with and separating from each other, and each having a plurality of coupling grooves therein corresponding to the coupling projections.

Claim 2. (Cancelled)

Claim 3. (Currently amended) The high speed direct mold clamping apparatus according to claim [[2]]1, wherein the plurality of grooved oil channels are arranged in the oil channel portion at a uniform interval.

Claim 4. (Original) The high speed direct mold clamping apparatus according to claim 1, wherein the grooved oil channel has a cross section shape selected from a group including arc, rectangle, semicircle and triangle.

Claim 5. (Original) The high speed direct mold clamping apparatus according to claim 1, wherein the grooved oil channel is gradually reduced at one end with depth to form a transition portion.

Claim 6. (Original) The high speed direct mold clamping apparatus according to claim 1, wherein the clamping ram has a central ram portion slidably coupled with the clamping cylinder and an O-ring arranged around the central ram portion for sealing function.

Claim 7. (Original) The high speed direct mold clamping apparatus according to claim 1, further comprising a stationary section for fixing the booster ram and the clamping cylinder in position.

Claim 8. (Original) The high speed direct mold clamping apparatus according to claim 1, wherein the clamping ram has a central ram portion slidably coupled with the clamping cylinder, a front ram portion and a rear ram portion, the front and rear ram portions having a same outside diameter.

Claim 9. (Original) The high speed direct mold clamping apparatus according to claim 1, wherein the clamping ram has a central ram portion slidably coupled with the

clamping cylinder, a front ram portion and a rear ram portion, wherein the central ram portion has a tapered portion of a width formed adjacent to the front ram portion.

Claim 10. (Original) The high speed direct mold clamping apparatus according to claim 9, wherein the distance from one end of the close contact portion to the second port therein is smaller than the width of the tapered portion.

Claim 11. (Original) The high speed direct mold clamping apparatus according to claim 1, wherein the clamping cylinder has a discal front sealing portion for sealing the inside of the clamping cylinder, the front sealing portion having a through hole portion for slidably supporting the clamping ram.

Claim 12. (Original) The high speed direct mold clamping apparatus according to claim 1, further comprising a position sensor for detecting the position of the moving platen.

Claim 13. (Original) The high speed direct mold clamping apparatus according to claim 12, wherein the position sensor includes a position detector fixed to the clamping cylinder and a position dog device fixed to the moving platen.

Claim 14. (Original) The high speed direct mold clamping apparatus according to claim 1, wherein the clamping ram includes a central ram portion slidably contacting the clamping cylinder, a front ram portion extended forward from the central ram portion and a rear ram portion extended backward from the central ram portion, and wherein the booster ram is extended through an end of the rear ram portion outside the clamping cylinder into the clamping ram.

Claim 15. (Original) The high speed direct mold clamping apparatus according to claim 1, wherein the clamping ram has a central ram portion for slidably contacting the clamping cylinder, a front ram portion and a rear ram portion, and wherein the booster cylinder is arranged within the rear ram portion.

Claims 16-17. (Cancelled)

Claim 18. (Currently amended) The high speed direct mold clamping apparatus according to claim 16, A high speed direct mold clamping apparatus of an injection molding machine comprising:

a clamping cylinder of a uniform inside diameter, the clamping cylinder including an oil channel portion having a plurality of grooved oil channels formed therein and a close contact portion formed of a curved surface leaded to the oil channel portion;

a clamping ram slidably coupled with the clamping cylinder, and having a first channel for allowing for the flow of oil and a booster cylinder connected to the first channel;

a booster ram slidably coupled with the booster cylinder of the clamping ram and having a second channel leaded to the booster cylinder;

a moving platen coupled with one end of the clamping ram;

a fastening element for coupling the one end of the clamping ram with the moving platen by adjusting the length therebetween;

a stationary platen installed to be opposed to the moving platen;

a first port formed in the oil channel portion for the selective flow of oil;

a second port formed in the close contact portion for the selective flow of oil; and means for controlling the flow of oil through the first and the second channels and the first and the second ports;

wherein the plurality of grooved oil channels are arranged radially in the oil channel portion, wherein the clamping ram has a plurality of coupling projections at one end, and wherein the fastening element includes a rotatable section arranged in the moving platen and rotatable to an angle, the rotatable section having a through hole for allowing the insertion of the end of the clamping ram and coupling grooves formed radially around the through hole.

Claim 19. (Original) The high speed direct mold clamping apparatus according to claim 1, wherein the control means control oil to be fed from the first port into the clamping cylinder in a position that the moving platen is coupled with stationary platen.